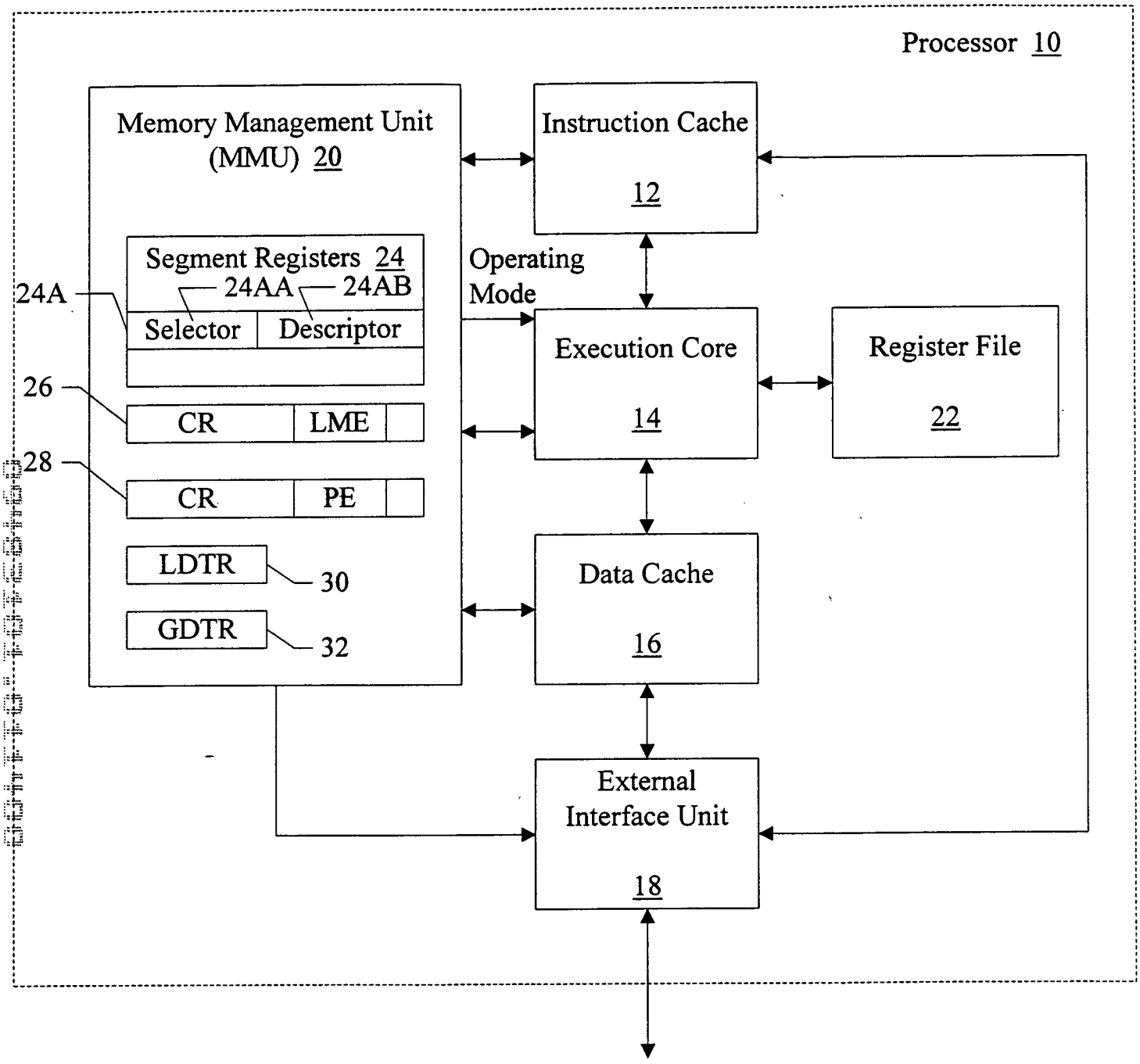
Processor 10
Memory Management Unit (MMU) 20
Segment Registers 24
24AA
24AB
24A
Selector
Descriptor
26
CR
LME
28
CR
PE
LDTR
30
GDTR
32
Instruction Cache 12
Operating Mode
Execution Core 14
Register File 22
Data Cache 16
External Interface Unit 18

Fig. 1

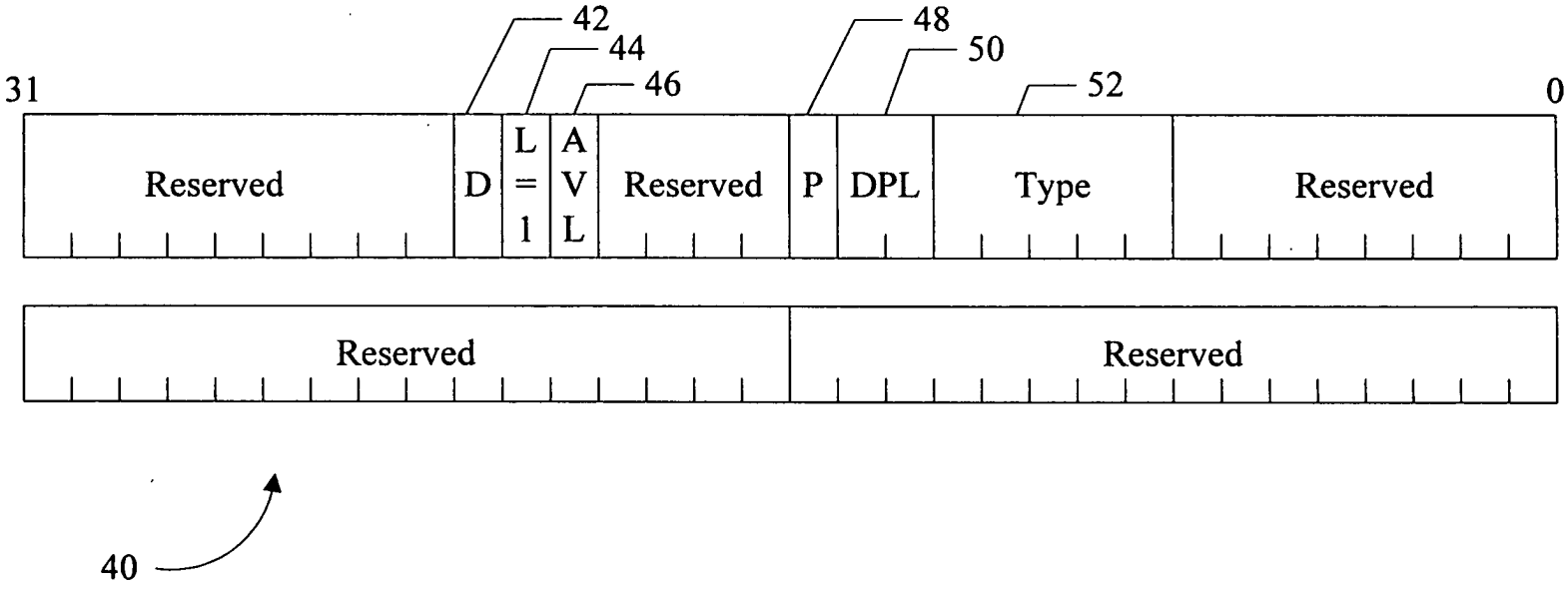

Fig. 2

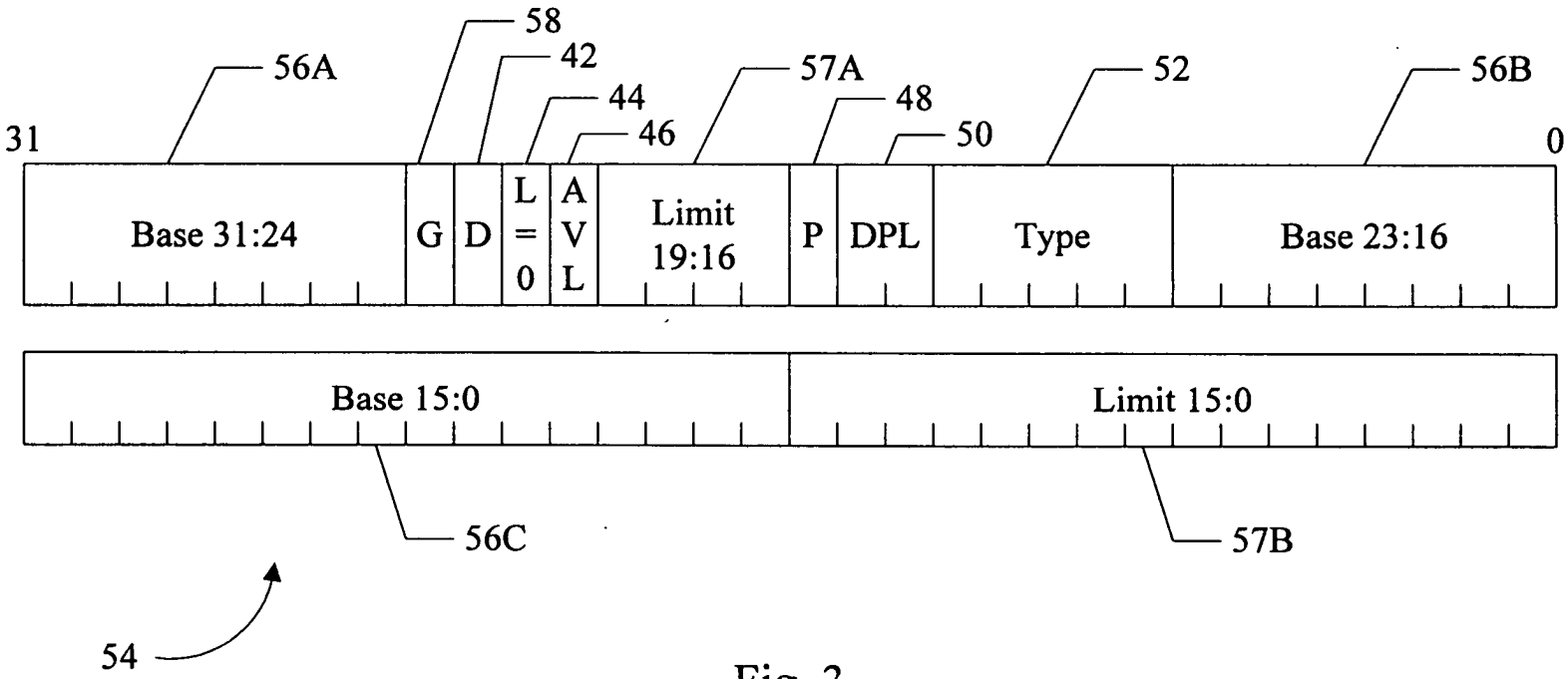

Fig. 3

09493101 .011400

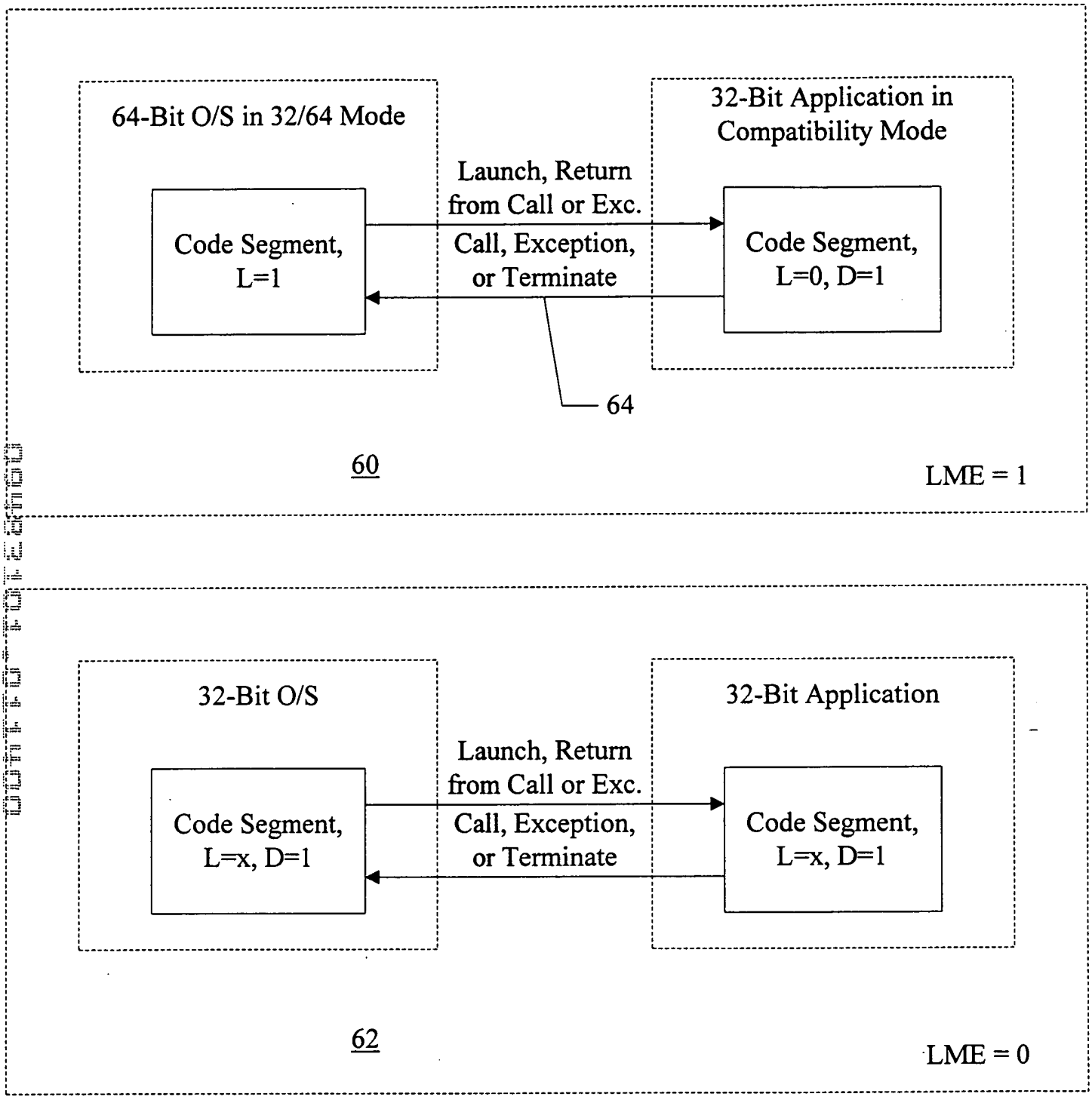
64-Bit O/S in 32/64 Mode
32-Bit Application in Compatibility Mode
Launch, Return from Call or Exc.
Call, Exception, or Terminate
Code Segment, L=1
Code Segment, L=0, D=1
64
60
LME = 1
32-Bit O/S
32-Bit Application
Launch, Return from Call or Exc.
Call, Exception, or Terminate
Code Segment, L=x, D=1
Code Segment, L=x, D=1
62
LME = 0

Fig. 4

LME	CS L Bit	CS D Bit	Operating Mode
0	x	0	16 Bit Mode
0	x	1	32 Bit Mode
1	0	0	16 Bit Compatibility Mode
1	0	1	32 Bit Compatibility Mode
1	1	0	32/64 Mode
1	1	1	Reserved

70

Fig. 5

Number of Override Prefixes (66H Operand, 67H Address)		0	1	2+
32/64 Mode	Operand Size	32 bits	64 bits	16 bits
	Address Size	64 bits	32 bits	32 bits
32 Bit Mode Incl. Compatibility Mode	Operand Size	32 bits	16 bits	16 bits
	Address Size	32 bits	16 bits	16 bits
16 Bit Mode Incl. Compatibility Mode	Operand Size	16 bits	32 bits	32 bits
	Address Size	16 bits	32 bits	32 bits

72

Fig. 6

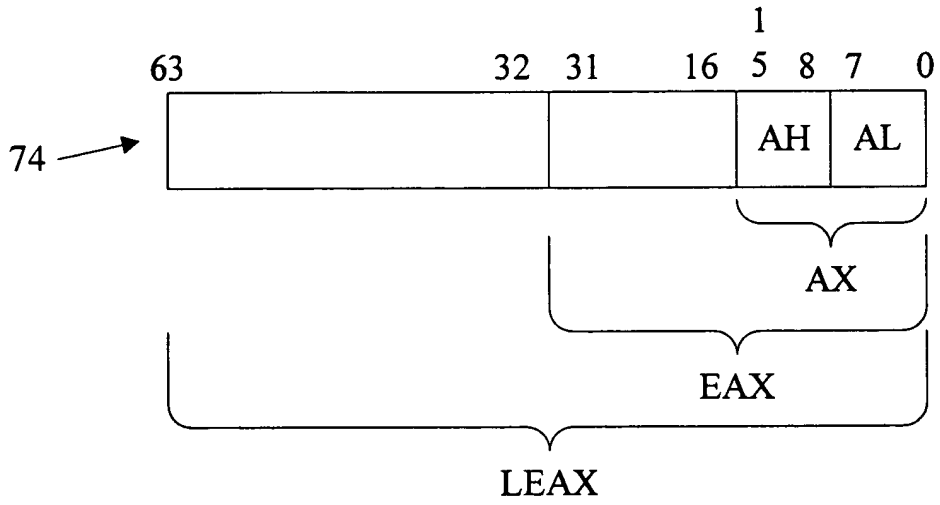

Fig. 7

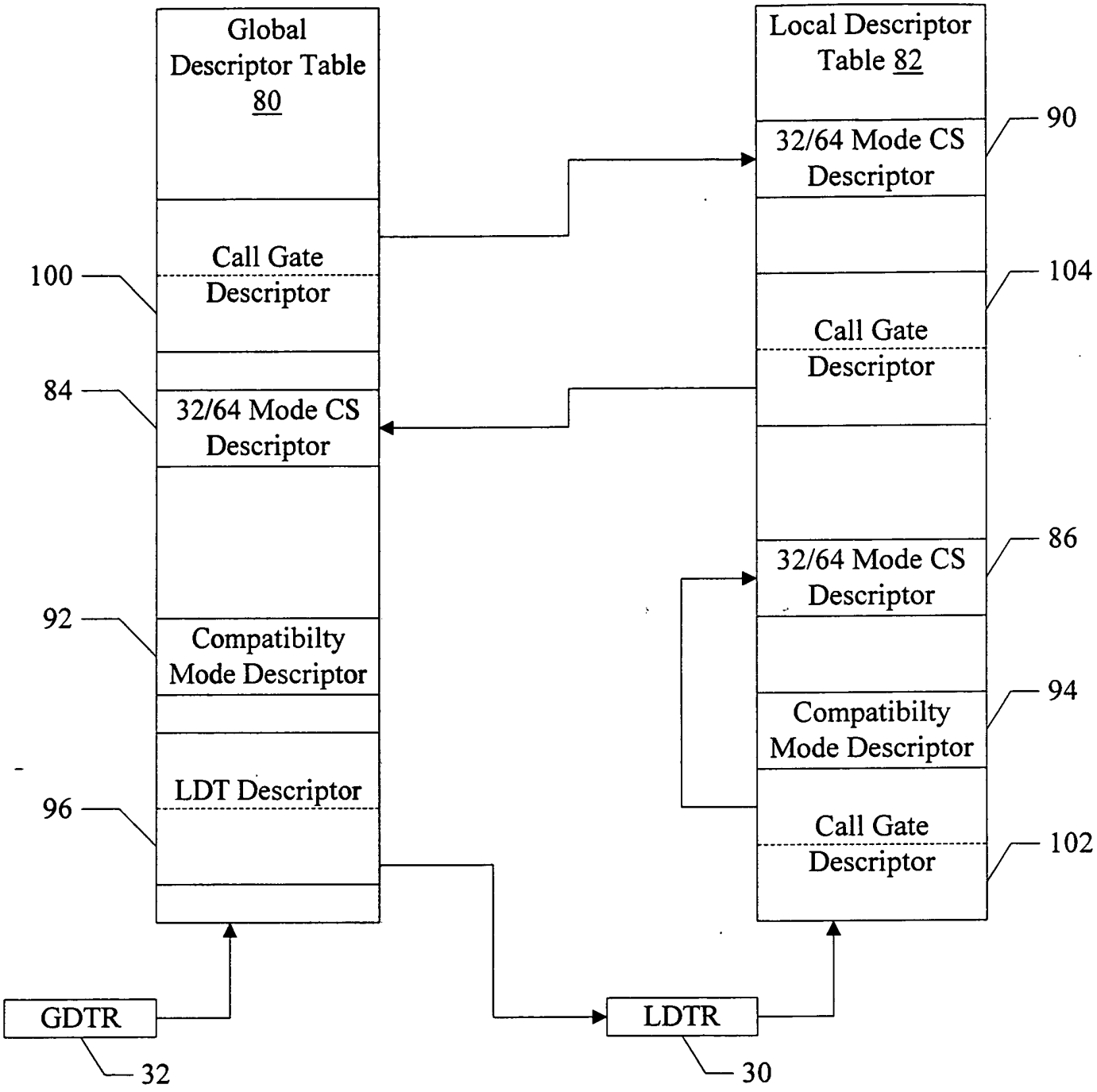
Global Descriptor Table 80
Local Descriptor Table 82
32/64 Mode CS Descriptor
90
Call Gate Descriptor
100
104
84
32/64 Mode CS Descriptor
86
92
Compatibilty Mode Descriptor
94
LDT Descriptor
96
Call Gate Descriptor
102
GDTR
32
LDTR
30

Fig. 8

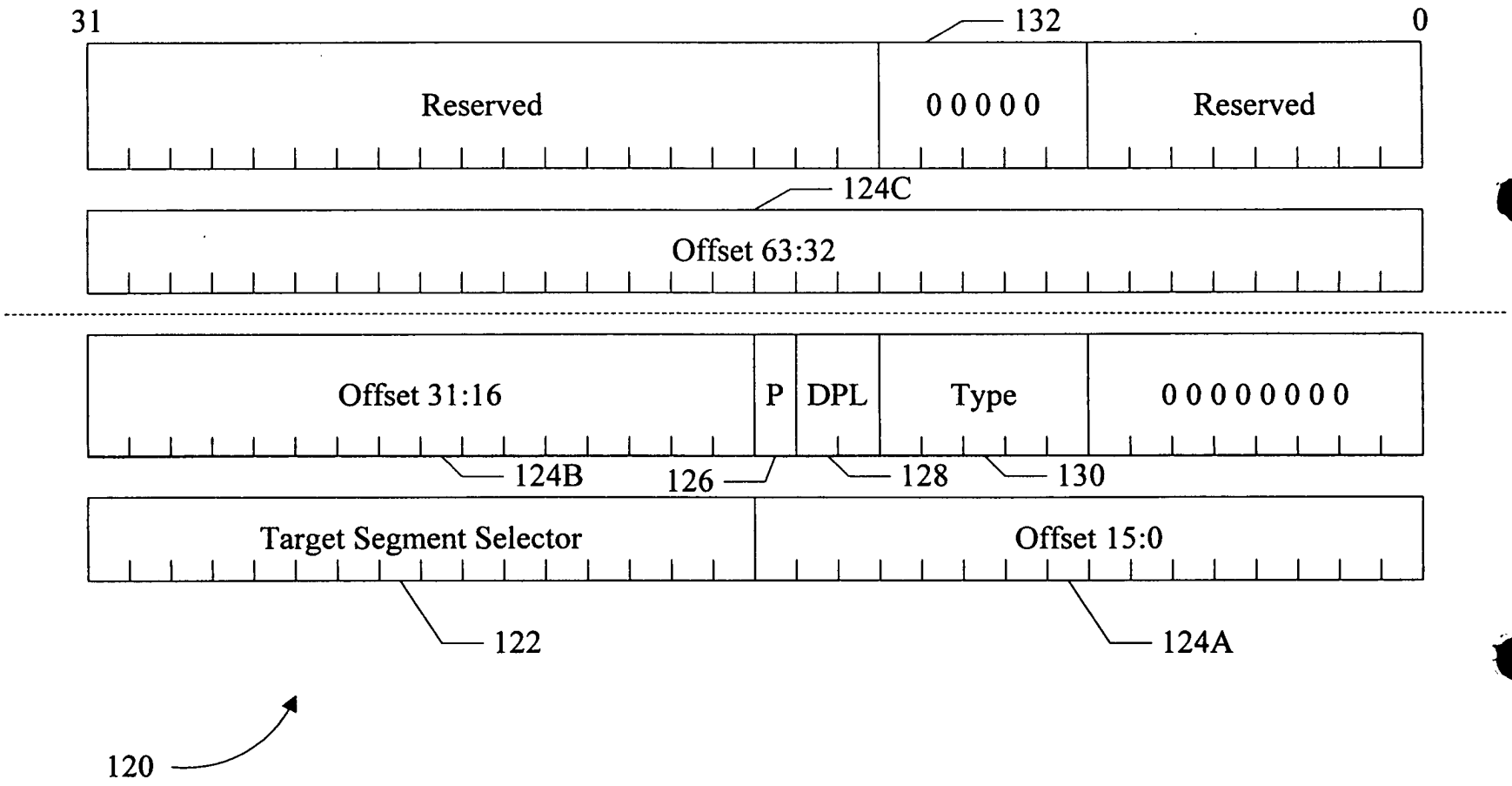
31
132
0
Reserved
0 0 0 0 0
Reserved
124C
Offset 63:32
Offset 31:16
P
DPL
Type
0 0 0 0 0 0 0 0
124B
126
128
130
Target Segment Selector
Offset 15:0
122
124A
120

Fig. 9

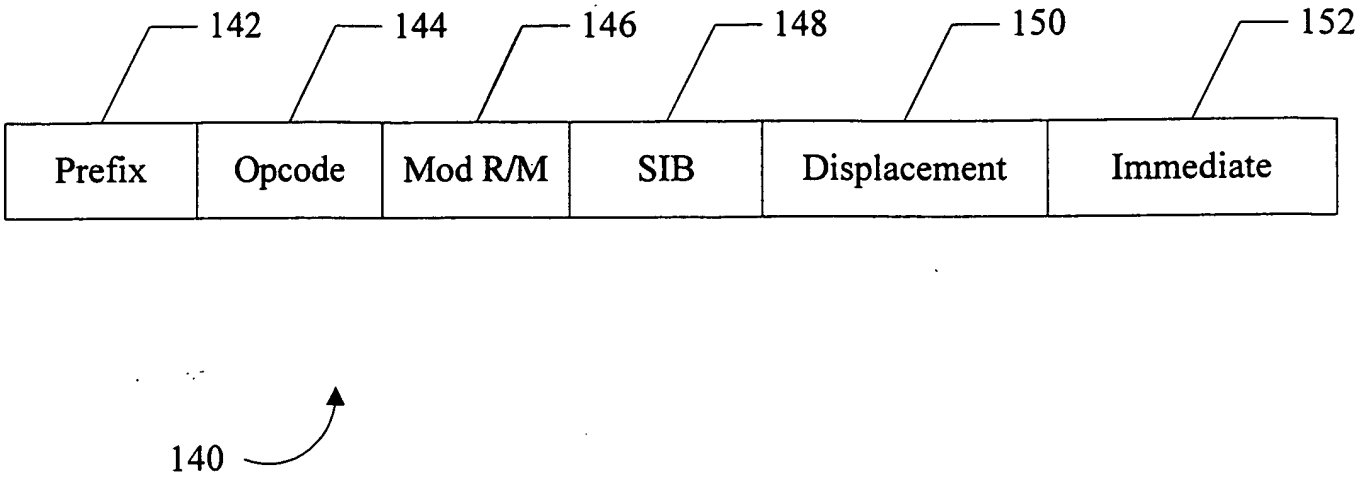
142
144
146
148
150
152
Prefix
Opcode
Mod R/M
SIB
Displacement
Immediate
140

Fig. 10

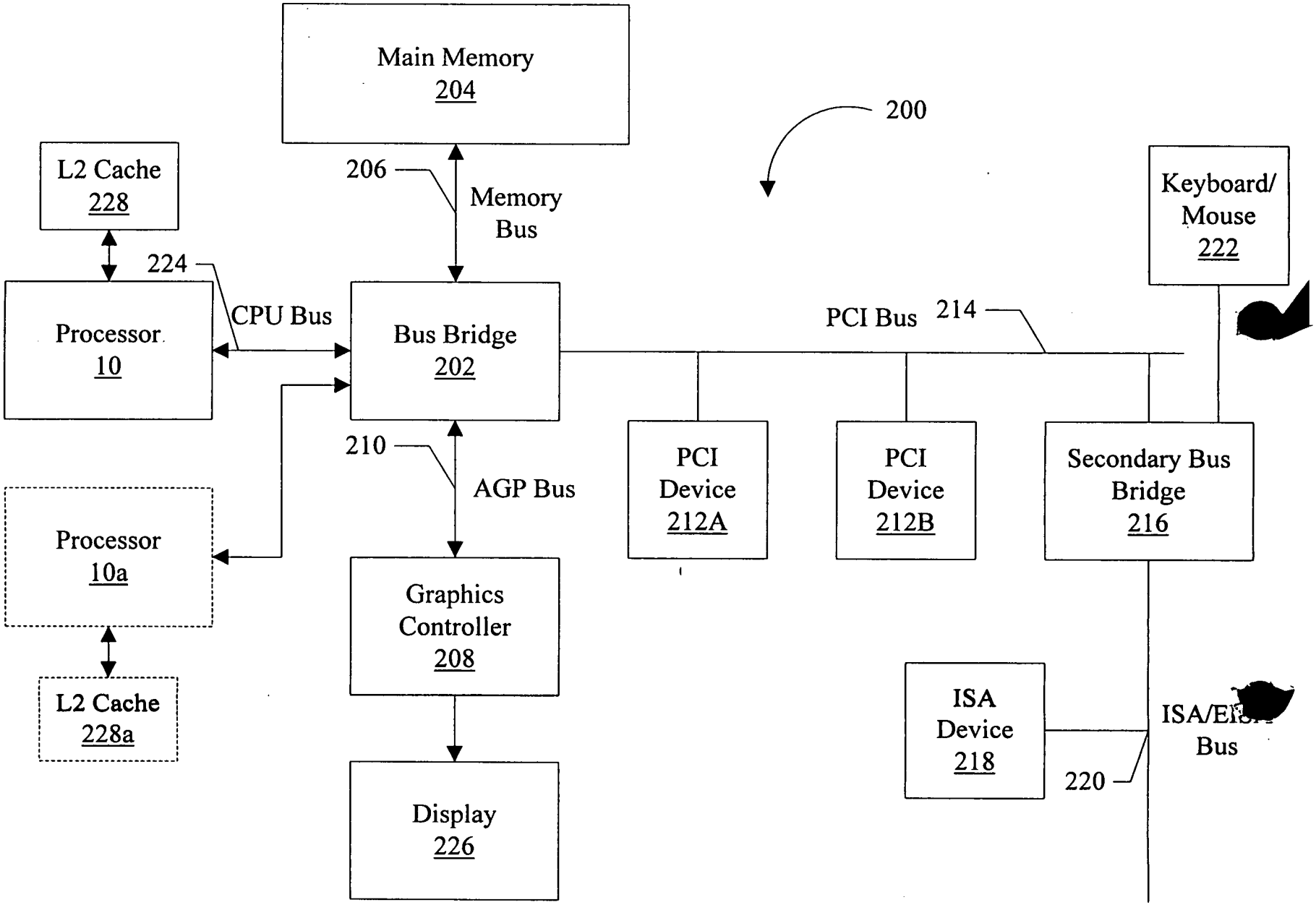

Fig. 11

09493101 .011400

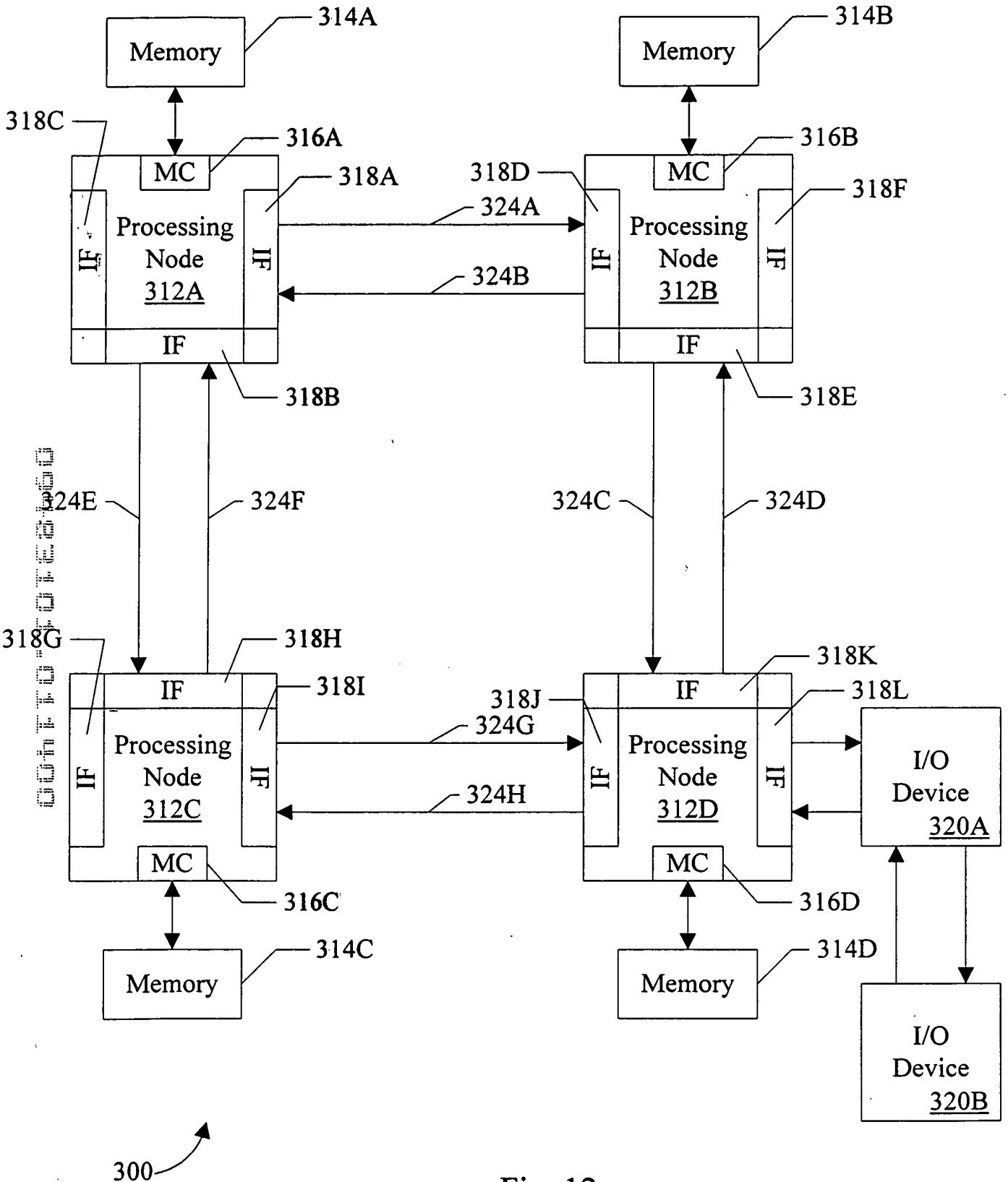
Memory
314A
Memory
314B
318C
316A
MC
318A
318D
MC
316B
318F
324A
Processing Node 312A
IF
IF
IF
Processing Node 312B
IF
IF
IF
324B
318B
318E
324E
324F
324C
324D
318G
318H
IF
318I
318J
IF
318K
318L
324G
Processing Node 312C
IF
IF
Processing Node 312D
IF
IF
I/O Device 320A
324H
MC
316C
MC
316D
Memory
314C
Memory
314D
I/O Device 320B
300

Fig. 12